CLAIMS

1. A building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit,

wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions.

2. A building sequence planning system for an automobile production line according to Claim 1,

wherein the restriction conditions include leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration.

3. A building sequence planning system for an automobile production line according to Claim 1,

wherein said processing unit propagates the building sequence in an offline process, which corresponds to an assembly completion process, to preceding and succeeding processes with lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding the building sequence for each of the preceding and succeeding processes.

4. A building sequence planning system for an automobile production line according to Claim 1,

wherein, in a mixed line including branches and joints, said processing unit calculates a different lead time for each vehicle by employing the number of vehicles residing or accumulated between two processes, and propagates the building sequence to preceding and succeeding processes with lead-time shifting, thereby deciding the building sequence for each of the preceding and succeeding processes.

5. A building sequence planning system for an automobile production line according to Claim 3,

wherein, for a vehicle which has to pass a line twice because of work for two-tone color painting, the lead time is modified by adding a time or the number of vehicles.

6. A building sequence planning system for an automobile

production line according to Claim 1,

wherein said processing unit is capable of varying a weight used in the penalty calculation for each of specifications and options.

7. A building sequence planning system for an automobile production line according to Claim 1,

wherein said processing unit decides the building sequence with the minimum penalty by using an optimization method represented by a mutually coupled neural network or a genetic algorithm.

8. A building sequence planning system for an automobile production line according to Claim 1,

wherein said processing unit is capable of setting the restriction conditions per process for which the building sequence is decided.

9. A building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit,

wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in

accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions, and

wherein said processing unit propagates the building sequence in an offline process, which corresponds to an assembly completion process, to preceding and succeeding processes with lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding the building sequence for each of the preceding and succeeding processes.

10. A building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit,

wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, the restriction conditions including

leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions, and

wherein said processing unit propagates the building sequence in an offline process, which corresponds to an assembly completion process, to preceding and succeeding processes with lead-time shifting by employing the number of vehicles residing or accumulated between two processes, thereby deciding the building sequence for each of the preceding and succeeding processes.

11. A building sequence planning system for an automobile production line, said system comprising an input unit for inputting information of vehicles to be manufactured, a processing unit for deciding an optimum building sequence based on the vehicle information inputted through said input unit, and an output unit for externally outputting a building sequence schedule decided by said processing unit,

wherein said processing unit prepares a vehicle building sequence, determines a degree of dissatisfaction of the prepared building sequence, as a penalty value, in

accordance with restriction conditions which are inputted through said input unit and are imposed when building the vehicles into work, the restriction conditions including leveling in distribution of vehicles having the same specifications, a minimum building interval of vehicles having particular specifications, and a maximum succeeding vehicle number and a minimum succeeding vehicle number in successive building of the vehicles when the number of vehicles successively loaded is taken into consideration, and decides a building sequence with a minimum penalty by preparing a plurality of building sequences and determining the penalty value for each building sequence with respect to the restriction conditions.